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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/602,558	06/23/2000	Toshiyuki Okuyama	5551-2	1024

7590 02/12/2004

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EXAMINER

LUGO, DAVID B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/602,558

Applicant(s)

OKUYAMA ET AL.

Examiner

David B. Lugo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,5-8,11,12,14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4,9,10 and 16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3,4,5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the species of Fig. 9, i.e. claims 3, 4, 9, 10, 13 and 16, in Paper No. 7 is acknowledged.
2. Claims 1, 2, 5-8, 11, 12, 14 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on two applications filed in Japan on 6/23/99 and 11/4/99, respectively. It is noted, however, that applicant has not filed certified copies of the 177098/1999 and 313900/1999 applications as required by 35 U.S.C. 119(b).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the timing detecting device of claim 9 including a peak detecting circuit in combination with the reverse spreading device, the channel estimating device of claim 10 including a rotation correcting circuit in combination with the reverse spreading device, and a power calculator for calculating a power value and selecting the reference rotation angle described in claim 13 in combination with the despreading device must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The abstract of the disclosure is objected to because it does not describe the embodiment elected for examination. Applicant is reminded that the length of the abstract should not exceed 150 words. Correction is required. See MPEP § 608.01(b). In addition, in line 17, “ACF” should be --AFC--.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The detailed description of the invention must include description of the timing detecting device recited in claim 9 including a peak detecting circuit in combination with the reverse spreading device of the third embodiment, the channel estimating device recited in claim 10 including a rotation correcting circuit in combination with the reverse spreading device of the third embodiment, and a power calculator for calculating a power value and selecting the reference rotation angle recited in claim 13 in combination with the despreading device of the third embodiment.

Claim Objections

6. Claims 3, 4, 9, 10, 13 and 16 are objected to because of the following informalities:

- a. Claim 3, line 9, “band” should be --base band--.
- b. Claim 3, line 13, “K-chip” should be --K-chips--.
- c. Claim 3, line 14, “complex” should be --the complex--.
- d. Claim 3, line 20, “multiplied” should be --the multiplied--.
- e. Claim 9, line 1, “The timing” should be --A timing--.
- f. Claim 10, line 1, “The channel” should be --A channel--.

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- g. Claim 13, line 7, "band" should be --base band--.
- h. Claim 13, line 11, "K- chip" should be --K-chips;--.
- i. Claim 13, line 12, "complex" should be --the complex--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 16 recites an AFC method to control a frequency of a reference frequency signal, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claim 16 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3, 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paradise U.S. Patent 5,179,573 in view of Leonard et al. U.S. Patent 5,285,472 (cited by applicant).

14. Regarding claim 3, Paradise discloses a despreading device for reversely spreading complex (I/Q) baseband signals comprising a digital correlator 28 which includes two digital correlators and correlates the complex baseband signals with the PN sequence (col. 2, line 64 to col. 3, line 1). Although Paradise does not explicitly show the details of digital correlator 28, it is well known in the art to implement a digital correlator by means of a spread code multiplier that multiplies complex baseband signals by spread codes and accumulative adders that produce correlation values by performing accumulative addition of the multiplied value for a symbol period of each of the I or Q components (see prior art Fig. 13 of instant application). It would have been obvious to one of ordinary skill in the art to use the multiplier and accumulative adders of the disclosed prior art Fig. 13 to implement the digital correlator of Paradise in order to carry out the desired correlation.

15. Paradise does not expressly disclose a frequency error correcting device that counts the number chips of the baseband signals to be inputted, and performs a rotation correction by rotating a phase of the baseband signals by an angle obtained by dividing 2π by a number M.

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16. Leonard et al. disclose correction of a frequency offset in a despreading device by rotating the phase of the baseband signal in 45° steps at eight times per cycle via a phase rotator and a modulo 8 counter prior to despreading (see Fig. 3; col. 3, lines 19-26).

17. It would have been obvious to one of ordinary skill in the art to use the frequency correction techniques employed by Leonard et al. in the despreading device of Paradise to help eliminate frequency offset (Paradise, col. 5, lines 24-30).

18. Regarding claim 4, in column 3, lines 19-24, Leonard et al. state that the phase of the signals are rotated to cancel out the offset frequency component by incrementing the phase in 45° steps (i.e. $2\pi/M$ where $M=8$) at eight times per cycle. Thus, the function of the mod 8 counter is equivalent to that performed by the chip number counter and the step number counter, as the mod 8 counter supplies a signal to the phase rotator to increment the phase used in the phase rotation in cyclical steps from 0 to $M-1$ (where M equals 8) in accordance with the modulo operation, and the step is incremented when the number of chip periods (k) supplied from clock f_c , which is at the chip rate, corresponds to the one eighth of a frequency cycle (i.e. $1/8$ of 2π).

19. Regarding claim 9, Paradise further discloses a peak detector 32 to determine the peak output corresponding to the spreading timing (col. 3, lines 1-4).

20. Claims 3, 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosure of prior art in view of Paradise.

21. Regarding claim 3, Applicant discloses in Fig. 19, a prior art reverse spreading device comprising complex matched filters (131, 132). Conventional matched filters, according to prior art Fig. 13, include a spread code multiplier that multiplies complex baseband signals by spread

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codes and accumulative adders that produce correlation values by performing accumulative addition of the multiplied value for a symbol period of each of the I or Q components.

22. Applicant's disclosure of prior art does not disclose a frequency error correcting device that counts the number chips of the baseband signals to be inputted, and performs a rotation correction by rotating a phase of the baseband signals by an angle obtained by dividing 2π by a number M.

23. Leonard et al. disclose correction of a frequency offset in a despreading device by rotating the phase of the baseband signal in 45° steps at eight times per cycle via a phase rotator and a modulo 8 counter prior to despreading (see Fig. 3; col. 3, lines 19-26).

24. It would have been obvious to one of ordinary skill in the art to use the frequency correction techniques employed by Leonard et al. in the reverse spreading device disclosed in the Applicant's disclosure of prior art to help eliminate frequency offset (see col. 5, lines 24-30).

25. Regarding claim 4, in column 3, lines 19-24, Leonard et al. state that the phase of the signals are rotated to cancel out the offset frequency component by incrementing the phase in 45° steps (i.e. $2\pi/M$ where $M=8$) at eight times per cycle. Thus, the function of the mod 8 counter is equivalent to that performed by the chip number counter and the step number counter, as the mod 8 counter supplies a signal to the phase rotator to increment the phase used in the phase rotation in cyclical steps from 0 to M-1 (where M equals 8) in accordance with the modulo operation, and the step is incremented when the number of chip periods (k) supplied from clock f_c , which is at the chip rate, corresponds to the one eighth of a frequency cycle (i.e. $1/8$ of 2π).

26. Regarding claim 9, Applicant further discloses in prior art Fig. 19, a peak detecting section 137.

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27. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paradise in view of Leonard et al. as applied to claim 3 above, and further in view of Lomp et al. U.S. Patent 5,912,919.

28. Regarding claim 10, Paradise and Leonard et al. teach a desreading device as discussed above, but do not disclose that the desreading device is included in a channel estimating device along with a rotation correcting circuit for detecting and correcting phase errors.

29. Lomp et al. disclose a channel estimating device in Fig. 2 where a rotation correcting circuit detects and corrects phase errors in the despread data. It would have been obvious to one of ordinary skill in the art to use a rotation correcting device as taught by Lomp et al. to correct the phase of the desreading device of Paradise and Leonard et al. in order to reduce the effects of noise and interference (see Lomp et al. col. 4, lines 24-32).

Allowable Subject Matter

30. Claim 13 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David B. Lugo** whose telephone number is (703) 305-0954.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

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or faxed to:

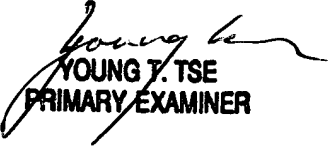
(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

dl

2/3/04


YOUNG T. TSE
PRIMARY EXAMINER